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Circular Letters:

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Advances in Antibiotics Research: The second national symposium concerning investigations in the field of antibiotics was recently held under the auspices of the Antibiotics Study Section of the National Institutes of Health in Washington, D. C. Papers were presented on streptomycin, dealing with chemical methods of assay, the development of resistance, and the effect of the anionic portion of the molecule of streptomycin and dihydrostreptomycin on the development of resistance. Another series of reports was presented on synergism, resistance, and the therapeutic use of antibiotics. In this group of communications, some of the pharmacological properties and comparative activities of the newer antibiotics, actidione, polymyxin, aureomycin, chloromycetin, and bacitracin were discussed. Twelve papers were presented describing new antibiotics; borrelidin from a streptomyces species was described, antibiotic substances from the sweet potato, the banana, the Indian carrot, hops, and seed plants were also reported, and two antifungal agents, one from subtilin broth, and the other called "xg" isolated from a streptomyces species, as well as the most recent discovery of Waksman, "Neomycin," were described in detail. A variety of studies were presented on the polypeptide antibiotics, particularly bacitracin, polymyxin, circulin and subtilin, none of which, incidentally, have yet been modified sufficiently to obviate the inherent toxicity of these drugs. It appeared to be the consensus that the polypeptide antibiotics are inherently nephrotoxic, and that their usefulness for parenteral administration can probably be accomplished only by a modification of the molecule. There were 17 papers describing the usefulness, pharmacology, physical and chemical characteristics of aureomycin and chloramphenicol. (Chloramphenicol is the generic name for chloromycetin, the name chloromycetin being the trade name for the product of one particular manufacturer. -Editor) These two drugs, which are now available on the market, are the first antibiotics demonstrated to be effective against certain of the rickettsial and viral diseases. Chloramphenicol is the first major antibiotic to be synthesized on a commercial basis. The method of synthesis and the structure of this drug were described. It was shown to be useful in the treatment of Rocky Mountain spotted fever, scrub typhus, typhoid fever, brucellosis, Gram-negative bladder infections, and primary atypical pneumonia. Aureomycin, on the other hand, appears to be a much more complicated compound, and although prepared commercially as a crystalline drug, it has not been synthesized. Aureomycin was shown to be useful in the treatment of Rocky Mountain spotted fever, typhus, scrub typhus, primary atypical pneumonia, staphylococcic, streptococcic, and pneumococcic pneumonia, brucellosis, and certain other staphylococcic infections. Evidence appears to be accumulating that aureomycin may be useful in the treatment of infectious mononucleosis, certain types of syphilis, lymphogranuloma venereum, and granuloma inguinale.

It is the function of the Antibiotics Study Section of the Division of Research Grants and Fellowships of the National Institutes of Health to promote, develop, and correlate research in the antibiotics field, and during the past 2 years, considerable sums of money have been granted to individuals

throughout the country to make it possible for them to continue studies on antibiotics. It has been planned by the Antibiotics Study Section to sponsor symposia on antibiotics research at periodic intervals in the future. (Am. J. Pub. Health, July '49, Editorial)

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Aureomycin in the Treatment of Granuloma Inguinale: The possible therapeutic efficacy of aureomycin in granuloma inguinale was advanced by Wright, Sanders, and their co-workers, who, primarily interested in the effect of the drug on lymphogranuloma venereum, treated 3 patients in whom a diagnosis of granuloma inguinale had been made. Although the post-treatment observation period was insufficient to permit definite conclusions, the clinical response was such as to warrant further study. Recently, Greenblatt and co-workers reported oral aureomycin to be effective in the treatment of 4 patients with streptomycin-resistant granuloma inguinale. These patients were followed only a short time and the final clinical outcome is not known.

R. C. V. Robinson et al. of the Venereal Disease Division of the Medical Clinic of the Johns Hopkins Hospital and University, therefore, undertook this study designed to achieve a more adequate evaluation of aureomycin in granuloma inguinale, using patient material available at the Baltimore Rapid Treatment Center.

From 1 July 1948 to 15 March 1949, 42 patients with proved granuloma inguinale were treated with various treatment schedules of aureomycin, using either the oral or intramuscular routes of administration. Although no one schedule has been evolved as yet which might be recommended as superior, the observations and conclusions are of sufficient interest to justify a preliminary report. Only those patients were accepted for study whose lesions were found to contain Donovania granulomatis in stained scrapings or smears. There was no selection of cases based on factors such as previous treatment, duration of infection, or extent of involvement.

It was found that aureomycin, when administered intramuscularly in dosages of 20 mg. daily for from 23 to 31 days, or 40 mg. 3 times daily for 5 days, is less effective than streptomycin. In addition, the severe pain accompanying each injection precludes this route of administration as a routine measure. Aureomycin, when administered orally in total dosages of from 4.2 Gm. to 40.0 Gm., resulted in initially satisfactory clinical responses in 27 of 36 patients. These promising results have stimulated additional studies employing larger amounts of drug. Two new schedules are now being tested. Using the newly available 250 mg. oral capsules, some patients are receiving 500 mg. 4 times a day for 10 days; others receive 1.0 Gm. 4 times a day for 5 days.

Studies of the effect of aureomycin on the D. granulomatis were carried out in the first 19 patients. The organism did not disappear from the lesions during the process of healing, and could still be demonstrated while any ulceration was present. No examinations have yet been made from completely epithelized lesions.

Experience indicates the necessity for an extended post-treatment observation period of at least 60 days before judging the therapeutic efficacy of any antibiotic in granuloma inguinale.

No untoward effects of aureomycin were observed except local pain. (Am. J. Syph., Gonor., and VD, July '49)

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Neomycin Activity Upon Mycobacterium Tuberculosis and Other Mycobacteria: The isolation of an agent, designated as neomycin, which is less favorable to the development of resistance among bacteria, less toxic, and possibly more potent than streptomycin was announced recently (see News Letter of 8 April 1949).

On the basis of extensive laboratory studies against various bacteria, including both saprophytic and pathogenic mycobacteria, as well as of experimental studies in animals against various Gram-positive and Gram-negative bacteria (exclusive of Mycobacterium tuberculosis), neomycin appears to meet the requirements for an effective chemotherapeutic agent. It is more active than streptomycin against both the saprophytic Mycobacterium 607 and pathogenic strains of M. tuberculosis. It is as active against the streptomycin-resistant strains of these organisms as against the sensitive ones. It favors to a far lesser degree than does streptomycin the development of resistant strains of mycobacteria although, on prolonged serial transfer of large numbers of cells, a considerable increase in resistance may be obtained. It is characterized by a relatively low toxicity to animals. The degree of toxicity of neomycin, in comparison with that of streptomycin, and its in vivo activity in tuberculosis have not yet been fully established.

The amount of neomycin required to inhibit the growth of mycobacteria depends upon the nature of the organism, size of inoculum, and length of incubation period. The saprophytic Mycobacterium 607 is inhibited by about 0.1 unit per ml. and the pathogenic M. tuberculosis by from 0.2 to 1.0 unit per ml. Against the ordinary pathogenic Gram-negative and Gram-positive bacteria, the activity dose of neomycin is from one twentieth to one fiftieth that of the toxic dose; this is true for both streptomycin-sensitive and streptomycin-resistant organisms. The evidence further suggests that neomycin is also more active against those bacteria than is streptomycin. (Am. Rev. Tuberc., July '49, S. A. Waksman et al.)

Observations on Lower-Lobe Involvement in Pulmonary Tuberculosis: Some 60 years ago Kidd and Fowler recognized that the lower lobe could be the site of the initial reinfection lesion in pulmonary tuberculosis. There has been a growing interest in this phase of tuberculosis, particularly in the last 2 decades. The authors had available for study a rather large cross section of pulmonary tuberculosis during a recent period of service at a former Army General Hospital. At this institution the term lower lobe was used to include the right middle lobe as well as the posterior inferior lobes of the lung because from a practical point of view, disease in the right middle lobe presents problems comparable to those associated with basilar disease. Realizing that the lingula could be considered the left middle lobe, the authors kept this anatomical factor in mind. In reviewing the following cases, no instance could be found in which the initial lesion was demonstrated in this portion of the lung field. The scope of this study has been confined to those cases with definite roentgenological evidence that the initial lesion occurred in the right middle lobe, or the right or left lower lobes. Likewise, in the cases considered from the standpoint of the results of treatment, the predominant involvement was in the lower lobe, even though serial films showed dissemination of a lesser degree in the upper lung fields.

A review was made of 2,784 successive cases of tuberculosis in which the diagnosis had been definitely established at the time of discharge or transfer from Bruns General Hospital, Santa Fe, New Mexico, during a 3-year period. All of the patients were males. In 2,777 cases the tuberculosis was considered to be of reinfection type; in the remainder the infection was in the form of a primary complex. Guided by the foregoing definition, 90 cases of lower lobe-disease were found. This represented 3.2 percent of the entire group. Eighty-five infections were classified as reinfection type, or 3.1 percent of the total reinfection group.

In this study the general incidence (3.1 percent) of reinfection type of lower-lobe disease compared favorably with other reported studies. According to Romendick, Friedman and Schwartz, the incidence may vary from 0.003 percent to 18.3 percent. In their own series of 2,354 cases, 63 (2.7 percent) had lower lobe disease. Lathrop and Lyman found an incidence of 3.1 percent, 83 cases in a series of 2,809 cases. On the other hand, Reisner reported only 0.8 percent lower-lobe involvement, 34 cases in a series of 4,494 cases. The lower lobe most frequently involved in the present series compared favorably with the previous reports. In 54.4 percent of the present series, the involvement was in the right lower lobe. Romendick et al. reported 58.7 percent with involvement of the right lower lobe and Hawkins and Thomas, and Sokoloff also found the right lower lobe more frequently involved.

The greater frequency with which tuberculosis occurred in the upper half of the lower lobe has also been noted in other studies. Ossen observed

that lesions occurred in the apex of the lower lobe more frequently than in the basilar portions. Sokoloff reported 10 lesions located close to the root of the lung or in the upper third of the lower lobe. One of the factors in this localization might be found in the work of Sweany, Cook and Kegerreis who studied the position of primary cavitation in pulmonary tuberculosis and found that the apices of the lower lobes frequently contained the oldest lesion in the anatomical specimen. Viswanathan discussed the physiologic interpretation of the apical localization and believes it represents a predisposition to disease because of inadequate ventilation and poor circulation in the upper portion of the lower lobe. The tendency for lower-lobe tuberculosis to become cavitary disease (72.9 percent of the cases in this series) is emphasized in other reports in the literature. Reisner commented that in the majority of his cases there was cavernous disease. Sokoloff observed in his series that there was a tendency for rapid development of cavernous disease.

The age range, from 18 to 46 years, with an average of 25 years, followed closely the ranges stated by other writers on this subject. Romendick et al. reported that 91.5 percent of their cases were under 40 years of age. In Reisner's group two thirds were between the ages of 17 and 30 years, and Viswanathan reported a range of from 17 to 42 years. Like this study, Romendick et al., Reisner, and Weidman and Campbell could find no definite relationship between the race of the patient and the incidence of lower-lobe disease. Although this series included only males, a greater incidence in females is reported in the literature.

Weidman and Campbell reported 6 patients treated by only bed rest. Four obtained a satisfactory result; 2 had cavitary involvement. In this study, although improvement was noted in 71.9 percent of the patients treated with bed rest, in only 15 of 57 patients was the response satisfactory with clinical and roentgenological improvement and sputum conversion. Only 2 of this group of 15 had cavitary disease.

There has been considerable difference of opinion concerning the choice of collapse procedure. Pohl mentioned pneumothorax as the preferred treatment. In contrast, Hawkins and Thomas reported pneumothorax ineffective in 11 of 15 cases of lower-lobe tuberculosis. Weidman and Campbell stated that 6 of 15 patients treated by pneumothorax obtained a satisfactory result. Reisner reported pneumothorax effective in 58 percent of his cases, 11 in a series of 19. Of the 19 patients in this study, 13 showed improvement, and 10 had a satisfactory result (clinical and roentgenological improvement with sputum conversion). Phrenic nerve interruption and pneumoperitoneum were ineffective in the 5 cases in which they were used. Hawkins and Thomas contrasted their poor results with pneumothorax with the response, including cavity closure, noted in 10 patients treated by phrenic nerve interruption and pneumoperitoneum. They emphasized the ineffectiveness of phrenic nerve interruption unless supplemented

by pneumoperitoneum. The results of Weidman and Campbell and Reisner supported this opinion. The former reported that all 4 patients in their series treated by phrenic paralysis had poor results. Reisner found phrenic nerve interruption effective in only one of 8 patients so treated.

Carr and Harter recommended pulmonary resection for that group of patients for whom there was no reasonable hope of cure by collapse therapy. In this group they also included lower-lobe disease not amenable to collapse treatment. In a series of 60 resections by Overholt and Wilson, 10 were for lower-lobe disease. All patients were improved or became clinically well after the procedure although in 5 the sputum was positive for Mycobacterium tuberculosis when the cases were reported. In Bailey's series of 80 resections, 4 were for lower-lobe disease; 2 patients were improved. In the lobectomy group discussed in this paper there were 7 patients. Six improved or became clinically well; 2 of these patients had persistently positive sputum postoperatively. In addition to resection, the use of thoracoplasty for lower-lobe disease has been discussed in the literature. Freelander suggested its use in persistent basal cavities. Romendick et al. reported 4 cases by thoracoplasty; the disease in only one patient became arrested. (Am. Rev. Tuberc., July '49, J. R. Vivas and C. A. Laubach, Jr.)

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Use of Para-Aminosalicylic Acid in Chronic Pulmonary Tuberculosis: In 1940, Bernheim made the interesting observation that the oxygen consumption of Mycobacterium tuberculosis was increased by salicylic acid and benzoic acid. Lehmann studied various derivatives of benzoic acid with the purpose of discovering a substance possessing bacterio-static properties against M. tuberculosis and found that para-aminosalicylic acid (PAS) was the most effective. Demonstration that the drug produced an inhibitory effect in vitro was confirmed by Sievers and by Youmans, and a retarding effect on the development of experimental tuberculosis was shown for mice by Youmans and for guinea pigs by Feldman, Karlson and Hinshaw. Trial of the drug by Lehmann and his collaborators in chronic pulmonary tuberculosis indicated that a favorable clinical effect was produced on the symptoms of the disease, especially cough, expectoration and fever. No serious toxic effects of administration of para-aminosalicylic acid were reported by Swedish investigators who have used the drug for 3 years. The side effects consisted of nausea, vomiting and transient albuminuria.

The effectiveness of PAS was studied in vitro and in animal experiments, as well as its clinical use in a small series of cases of chronic pulmonary tuberculosis. The serum of patients and normal individuals after ingestion of from 2 to 4 Gms. of para-aminosalicylic acid produces a definite inhibition of the growth of M. tuberculosis in Dubos media. This has been demonstrated with the H37Rv strain as well as with strains recovered from patients with active pulmonary tuberculosis.

Para-aminosalicylic acid was administered to 12 patients with advanced chronic pulmonary tuberculosis. The dosage employed was from 10 to 11 Gm. daily in courses of 3 weeks, with a free interval of one week. In 7 patients in whom the symptoms of active infection were sufficiently marked to permit judgment of the effectiveness of the drug, observable clinical improvement took place in all. In 3 patients recurrence of symptoms on cessation of treatment took place. Three patients who suffered from fever and signs of acute exudative tuberculosis were much improved and in good general condition after treatment, but without arrest of their disease.

The characteristic effects of administration of para-aminosalicylic acid were prompt reduction in cough and expectoration, and decrease in fever when present. These favorable results were generally manifested within the first week of treatment. The side effects of the drug were intermittent nausea, vomiting, and looseness of the bowels. In 3 of the 12 patients these symptoms were sufficiently severe to force discontinuance of the drug. The favorable clinical results of treatment with para-aminosalicylic acid in chronic pulmonary tuberculosis suggests that this drug is a useful agent in the treatment of acute exacerbation of the disease. The possibility that administration of para-aminosalicylic acid with other antibiotics, such as promizole and streptomycin, would appear to deserve investigation.

Since this paper was written, PAS has been administered in one or more courses to 10 additional patients with chronic pulmonary tuberculosis. Clinical improvement took place in all instances, characterized especially by reduction in cough and expectoration and improvement in well-being. Side effects were few on a dosage of 3 Gm. 3 times daily. A favorable clinical response was also noted in patients who had become resistant to streptomycin. In the treatment of cavitary pulmonary tuberculosis by lung immobilizing therapy in the equalizing pressure chamber, cavity closure has taken place in a number of cases of advanced and moderately advanced tuberculosis; in a few patients recently treated by this method PAS has been added in the hope of shortening the time required for cavity closure. (Dis. Chest, July '49, C. Eastlake, Jr. and A. L. Barach)

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Orthoxine in Bronchial Asthma: Since the elucidation by Chen and Schmidt of the chemical structure and the pharmacologic effects of ephedrine, this drug has ranked with epinephrine as one of the most valuable medications for treatment in bronchial asthma. Although less active as a bronchodilator than epinephrine, ephedrine is effective, and its action is prolonged. However, undesirable effects such as nervousness, tremulousness, sleeplessness, vertigo, sweating, anorexia, nausea and palpitation often interfere with the use of the drug or require the additional administration of sedatives. In the last few years, therefore, attempts have been made to produce sympathomimetic

compounds with less effect on the cardiovascular and central nervous systems. One of these, orthoxine (orthomethoxy-b-phenylisopropyl methylamine hydrochloride) (Upjohn Co.), appears to have certain advantages over ephedrine. In animal experiments orthoxine was found to be more effective than ephedrine in relieving bronchial spasm induced by histamine, pilocarpine and acetylcholine. It caused practically no pressor response and less stimulation of the central nervous system than ephedrine. In man, orthoxine has furnished protection against asthma-like attacks induced with histamine or methacholine.

Fifty patients with bronchial asthma, about equally distributed between the sexes and ranging in age from 4 to 63 years (the majority being adults), served as subjects for this study. The perennial type of asthma predominated. Some patients were receiving treatment with specific allergenic extracts, and many of them had been instructed to eliminate offending allergens. All subjects were having from mild to severe asthma at the time treatment with orthoxine was started, and they were observed for periods varying from weeks to several months. The dose varied from 50 mg. in children to 100 or 200 mg. in adults, given every 4 hours as needed. Control studies with placebos were used in some cases, and no benefit was observed. Relief of symptoms, when it occurred, was evident in from 20 to 30 minutes. The results were classified as excellent, if complete relief of symptoms occurred for several hours, fair, if relief was 50 percent or more and lasted 2 or more hours, and unsatisfactory, if the relief was less than 50 percent or if the duration of activity was short.

Eighteen patients (36 percent) had excellent relief, 17 (34 percent) obtained fair relief, and the remaining 15 (30 percent) had unsatisfactory results. On the basis of the degree of asthma, patients with mild asthma fared best, followed by those with cases of moderate severity. Those with severe asthma obtained the least relief. Prior to the administration of orthoxine 28 patients had been taking ephedrine in one form or another or, having previously taken orthoxine, had substituted ephedrine. In this way the authors were able to gather some impression of the relative value of the 2 drugs, taking into account the degree of relief as well as the intensity of side reactions. Ten patients preferred orthoxine. In 2 there was no advantage in one drug over the other, whereas the remaining 16 preferred ephedrine. In 4 patients, substitution of orthoxine for ephedrine was advantageous; marked side effects with ephedrine had developed in 3, and one of these had hypertension; in this patient and in a fourth, who had a recent coronary infarct, it was believed that ephedrine, because of its pressor effects, should not be given. All 4 of these patients tolerated orthoxine well and obtained excellent relief.

Observations were made in asthmatic subjects to determine the degree to which orthoxine could protect against asthma-like attacks and a fall in vital capacity following the inhalation of aerosolized allergenic extracts. Three patients, all of whom had been tested in this manner and had had significant

pulmonary reactions following inhalations of nebulized extracts (5 percent birch pollen in 2 cases and 0.25 percent Endo house dust in the remaining one) were chosen for this study. In no case did orthoxine protect the patients, the pulmonary response being almost identical with that experienced without the drug. This may be caused by the lack of refinement of the method or to the relatively heavy exposure of the inhaled extract, which may mask slight or moderate activity of the drug. This lack of protection by orthoxine is in contrast to the reported efficacy of this agent given by mouth in affording some degree of protection or relief in asthma-like attacks induced with histamine or methacholine given parenterally.

Of the 50 subjects with asthma, 43 had no unpleasant side reactions. Of the remaining 7, 2 had questionable nausea, one had nausea, one had nausea and vomiting, one had menstrual-like cramps, one reported dizziness and sleeplessness, and one reported excessive perspiration. Four of these 7 patients with side reactions obtained little or no relief from orthoxine, so the drug was discontinued. The remaining 3 had excellent or fair relief of asthma upon decrease in the dose of the drug to 50 mg., or, as in one case, when the drug had been withheld for a few days and was again given.

Although patients have a tendency to overestimate the benefits of any new drug when it is first used, the authors believe that their favorable impression of orthoxine is fairly well founded.

The response of 27 out of 35 patients with mild or moderate asthma was excellent or fair with orthoxine, which compares favorably with other well known oral sympathomimetic agents. Similar results with orthoxine were recently reported by Wittich. However, the majority of patients in this series in whom comparison was possible, preferred ephedrine to orthoxine. In the 15 patients with severe asthma, the drug was relatively ineffective. In most cases, these patients obtained relief with other medications such as epinephrine, isuprel and aminophyllin. The authors' experience is not entirely in accord with the findings of Curry, Fuchs and Leard, who, in their clinical studies on 21 asthmatic subjects, observed orthoxine, in doses of 200 mg., to be comparable to ephedrine in 30-mg. doses. This discrepancy may be accounted for, in part, by the fact that often smaller doses of orthoxine are used and usually ephedrine is given with a barbiturate.

The authors are aware that results similar to those obtained with orthoxine might have been obtained with other preparations for asthma. However, the figures cited do not indicate the true value of a preparation such as orthoxine because they leave out of account reactions of individual patients. For instance, more patients may obtain relief from asthma with ephedrine than with orthoxine, as in the cases discussed above but in certain patients who may be unable to tolerate ephedrine, orthoxine may give relief and may be well tolerated. The authors believe, therefore, that orthoxine is a valuable addition to the list of agents available for treatment in asthma. (New England J. Med., 11 August '49, I. W. Schiller et al.)

Pyelography by Rapid Injection: Present-day experience with intravenous pyelography centers about 2 radiopaque media: (1) 3,5-diiodo-4-pyridone-N-acetic acid, prepared in a solution of diethanolamine, furnished commercially as "diodrast"; and (2) disodium N-methyl-3,5-diiodo-chelidamate, an aqueous solution furnished commercially as "neo-iopax." Both media are accepted by the Council on Pharmacy and Chemistry; both produce excellent, workable views of the urinary tract following intravenous injection.

Neo-iopax, although perhaps not responsible for even a single death, has the disadvantage of occasionally producing acute pain in the injected arm during and for several minutes following administration.

Contrary to the manufacturer's advice to inject neo-iopax slowly, the authors have found that rapid intravenous injection eliminates all but an occasional, brief, mild arm pain for which no analgesic measures are needed. The authors also take exception to the manufacturer's statements that the use of neo-iopax is contraindicated in patients with severe liver disorders, nephritis, and hyperthyroidism, that great care must be exercised in cases of uremia, that preliminary liver and kidney function tests are advisable in suspected cases, and that caution must also be exercised in patients with any severe systematic disease. The authors feel that urographic information is often desirable in precisely the conditions named, and especially during established renal insufficiency the cause of which is still uncertain.

The authors state that true sensitivity reactions did not appear in any case in their series. The recommended tests for sensitivity are (1) injection of a small amount, such as 1 or 2 cc., followed by a waiting period, and (2) the sublingual application of 1 cc. of solution, followed by examination of the mucosa in 10 minutes for signs of edema, and after 30 minutes (the medium having been swallowed) general survey of the patient for allergic responses. The authors have simplified the test as follows: an injection of 0.1 cc. is made intravenously and the syringe left in situ. If no evidence of systemic reaction (by which the authors do not mean such incidental mild reactions as flushing or warmth) appears within 30 seconds the injection is completed. In all cases, regardless of the patient's weight, with the exception of small children, 20 cc. of 50-percent neo-iopax were used.

The cases presented are routine ones of 200 successive, unselected patients undergoing urography at the Bellevue Hospital, New York. Contraindications were disregarded, although it is evident from the diagnoses that the contraindications mentioned occurred frequently. The injection was made rapidly (in less than one minute) in practically all cases.

The method recommended by the authors is to inject the solution through a 19- or 20-gauge needle in one minute or less, preferably within 30

seconds, with the arm extended and perpendicular to the trunk. No mortality or severe untoward reactions were encountered in this series. (Am. J. Roentgenol., July '49, L. J. Friedman et al.)

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Toxic Level of Fluorine in Water Supplies: The author believes that the experiment of putting one part per million of fluorine in the municipal water supplies of various cities which is now in progress in order to prevent tooth decay, is being prematurely tried. Fluorine as related to tooth decay has not had nearly the exhaustive study that dental fluorosis has had.

There are several areas in the United States where the water has a natural fluorine content of 1 p.p.m. In 1937, after moving from Michigan to such an area, Hobbs, in eastern New Mexico, the author was impressed by the number of young persons who were disfigured by defective teeth, which defects on cursory notice looked like severe decay. Several of his patients were asked what was wrong with their teeth and the reply was invariably, "Texas teeth!"

The author then began reviewing the literature and examining the school children in Hobbs. A defect of from mild to moderate in the enamel of the secondary teeth was present in about 18 percent of the children. The damage from the ingestion of fluorine comes during the calcification of the secondary teeth, which occurs during the first 6 years of life (with the exception of the second and third molars), and during this period tooth decay is not important. Therefore, there should be a chronological division of the population concerning when fluorine is used. Therefore, in an attempt to produce flawless secondary incisors, ingestion of distilled water was recommended for all children under 6 years of age, and certainly for those under 3.

There has been no absolute and definite agreement among investigators on the minimum toxic dose of fluorine in respect to dental fluorosis. The workers who have done the most comprehensive animal experimentation, Smith and his associates, of the University of Arizona, set the top limit as 0.9 p.p.m. In 1944, Doctor Smith, at the author's request, wrote in detail and corroborated their previous observations and added that, whereas he and his associates before had stated that 0.9 p.p.m. of fluorine was toxic, they now dropped the level to 0.8 p.p.m. The opinion was expressed that, with the increased use of fluorine sprays for fruit trees, the possibility for ingestion of fluorine is greatly increased.

The author made 2 surveys in Hobbs, where fluorine naturally occurs in drinking water in a concentration of 1 p.p.m. Both were consistent in that

there was roughly one third of those surveyed who had some defect of enamel. However, because of current statements concerning the toxic level, the second survey was broken down and statistics gathered more carefully.

School children who had their permanent central incisors were examined, because it was felt that these would be the important teeth from a practical point of view. Only those children who had been born and reared in Hobbs were included. Each child's history was checked concerning whether he had lived away from home for any period exceeding 2 months, and those who had were eliminated. This is important because there are many areas within 20 miles in which water has a natural fluorine content of 2.5 p.p.m. Hobbs also has a migratory population because of the fact that it is an oil-producing country and the workers move from town to town depending on drilling activity in any particular section. Ninety children were left after this screening. Approximately 300 children were examined initially. Of this group of 90 children, 28 had some defect of enamel. Because this number was larger than the author had expected, the children were divided into 3 subgroups. The first subgroup was composed of those who had received distilled water as their drinking water in the first 2 years of life. There were 9 children in this group and none of them had a defect. The second subgroup contained those children who had received water from the municipal water supply. In this group there were 65 children. Eighteen, or 36 percent, had some defect of enamel. A sample of water was taken and sent to the University of New Mexico, Albuquerque, N. Mexico, for fluorine analysis and the content was reported as 0.9 p.p.m. The defect which the author has noted is not severe, but the tooth is definitely far from flawless. The mild defect is a white streaking of the enamel with some pitting, varying in size from pinhead to pinpoint. None of the teeth had any discoloration of the pitting. The author is unable to explain this high percentage because from past statistical surveys only when the water has from 1.3 to 1.6 p.p.m. should one expect this percentage of mild mottling. The author has talked with water drillers in Hobbs (all water supplies are from artesian wells), and they expressed the opinion that all the water sands are connected. There is a higher concentration of fluorine in outlying wells; however, all the water analyses of the municipal supply have shown from 0.9 to 1 p.p.m.

The use of fluorine sprays on fruit during the past 10 years may have increased the percentage. The volume of water drunk is also a factor. If the consumption of water is twice the usual amount, there would be an increase in the incidence of dental fluorosis. The climate in this area is hot and dry, and it is logical to assume that some of the increase in incidence is due to more water consumed.

The third subgroup consisted of 16 children who had used water from private wells. Six of the children had normal teeth. Ten of the children had a defect.

With so few cases, it is impossible absolutely to determine the toxic level, but, among the children examined, dental fluorosis was observed in 30 percent of the children who drank water containing 0.9 p.p.m. of fluorine. From the reports on hand and because there is some controversy regarding the toxic level of fluorine, the author believes that the widespread use of fluorinated water is a faulty procedure and will lead to unhappy results.

He concludes that if fluorine is added to the municipal water supplies, the level should be lowered to 0.7 p.p.m. and that if the level of fluorine is above 0.7 p.p.m., then children under 3 years of age, and preferably under 6, should use filtered or distilled water in order to prevent a defect in their permanent teeth, which are forming during these years. (Am. J. Dis. Children, July '49, D. C. Badger)

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Evaluation of Disinfectants for Cold Sterilization Purposes: The Panel on Antiseptics in the Field, of the Armed Services Field Medical Materiel Group met at the Naval Medical Field Research Laboratory late in 1948. It was recommended that specific germicidal studies be undertaken on zephiran chloride. Information was particularly desired regarding the ability of this compound to withstand extremes of temperature without alteration of germicidal properties, and also to determine its efficiency as a disinfectant and detergent.

Zephiran chloride was one of the first of the quarternary compounds developed as a disinfectant. As others have been more recently introduced by various manufacturers, parallel tests were conducted on a number of newer compounds having similar compositions. It was felt that results of a comparative nature would give a more complete basis of evaluation.

Quarternary ammonium compounds are cationic detergents having marked germicidal properties. They are soluble in water, alcohol, acetone and many other substances. Their germicidal efficacy is greatly enhanced because of their marked wetting action. Consequently, there is an increasing use of these substances in the fields of medicine and sanitation.

Eight proprietary quarternary compounds were tested. These were:

(1) CEEPRYN CHLORIDE (Cetyl pyridium chloride, Merrill).

(2) PARKER GERMICIDAL TABLETS (Para disobutyl phenoxy ethoxy ethyl dimethyl benzyl ammonium chloride monohydrate, A. J. Parker Company).

(3) PDDB 591 (Beta phenoxy ethyl dimethyl dodecyl ammonium chloride, Ciba).

(4) PDDB 593 (Identical to 591 except prepared in the form of a tincture).

(5) THERASEPTIC (Alkyl dimethyl benzyl ammonium chloride, William Getz Company).

(6) PHEMEROL (Para teriary octyl phenoxy ethyl dimethyl benzyl ammonium chloride, Parke Davis).

(7) ZEPHIRAN CHLORIDE (Alkyl dimethyl ammonium chloride, Winthrop).

(8) ZEPHIRAN CHLORIDE TINCTURE.

One organic mercurial compound, MNP ANHYDROUS (Composition unreported, Commercial Solvents Company) was subjected to test.

It was the standard practice to conduct all tests in a thermostatically controlled water bath at a constant temperature of 25° C. Sterile glassware was used and tests were performed under aseptic conditions. Serial dilutions of the compounds being evaluated were made in sterile distilled water, and in the case of the tinctures, a mixture of alcohol, acetone and water was used. Fresh dilutions were prepared before each run in sterile, stoppered, mixing graduates.

Test organisms used were: (1) Staphylococcus aureus 209 and (2) Bacillus anthracis. The strain of Staphylococcus aureus was procured from the Food and Drug Administration and the organisms were transferred daily on media made according to FDA specifications. Eighteen to 24-hour-old cultures were employed at all times for testing. Bacillus anthracis was selected for the determination of the sporicidal effect of the germicides.

In regard to corrosive ability of the test germicides, results indicate that all are rather severe in this connection on certain metal surfaces with the exception of a solution of PARKER GERMICIDAL TABLETS or MNP, ANHYDROUS. The addition of sodium nitrite as an inhibitor prevented any changes in scalpel blades for a period of 7 days with the exception of THERASEPTIC in which scalpel blades rusted even upon the addition of the rust inhibitor.

Sodium nitrite inhibited rusting of the scalpel blade through the seventh day in TINCTURE OF ZEPHIRAN and in PDDB. These substances are strongly corrosive without the addition of this chemical.

In no case did the inhibitor prevent corrosion of aluminum or galvanized steel. Solutions in which these metals were immersed became clouded with a white precipitate which accumulated on the metal in a white gelatinous coating.

It is recommended that sodium nitrite, in convenient pilular forms, be dispensed with the germicide. This substance could be added at the time the sterilizing solution is made up without the added bother of weighing out the crystalline sodium nitrite.

Tests with distilled water showed considerable rusting of the scalpel blades. However, no other metal was attacked.

In selecting one of these agents for cold sterilization purposes, packaging and ease of dispensing seems to be of paramount importance. Two germicides tested meet this requirement adequately. THERASEPTIC and PARKER GERMICIDAL TABLETS. THERASEPTIC is dispensed in 10 cc. capped vials which is sufficient to make one liter of (1:1000 dilution) sterilizing solution when added to that volume of distilled water. This obviates the necessity of time-consuming measuring of small amounts of the germicide. PARKER GERMICIDAL TABLETS are dispensed in 4 Gm. tablets which are readily soluble in distilled water, one tablet in 480 cc. produces a 1:1000 dilution which is the standard strength for sterilization of instruments. This method is very convenient in that no weighing is necessary and being in the dry state, breakage during shipment is of no concern.

Tinctures of ZEPHIRAN CHLORIDE and PDDB were found to be superior germicides at all times, although it is believed that they would not be suitable as cold disinfectant agents. Aqueous solutions of PDDB, PARKER GERMICIDAL TABLETS, and CEEPRYN CHLORIDE were found to exhibit consistently high germicidal effect. PARKER GERMICIDAL TABLETS, however, exhibited relatively lower sporicidal ability against Bacillus anthracis. Experiments to date indicate that PDDB is the superior germicide of the series tested for cold sterilization purposes. Extremes of temperature do not affect stock solutions of the germicides significantly. (Naval Medical Field Research Lab., Camp Lejeune, N. C., Res. Proj. NM 012 011, 23 June '49, W. W. Taylor)

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The Tautograph in Angiography: Heretofore, the success of angiography has depended on estimating accurately the time at which diodrast would reach a particular chamber of the heart or great vessel and making the roentgen-ray exposure at that precise moment. Physiological tests were used to calculate the circulatory time and, although fairly satisfactory, they consumed the operator's time and usually did not give an indication of the type of congenital shunt or shunts present in the circulation.

Angiographic procedures have been further handicapped by the lack of automatic roentgenographic equipment that was capable of making a series of 6, 8, 10, or 12 exposures at an interval of one second or less and synchronized with a Potter-Bucky grid. Hence, if angiography was to become a successful routine roentgenographic procedure, the above problems had to be overcome. To do this it was necessary to construct equipment, designated as a tautograph, that could take a series of from 6 to 12 roentgenograms at one-second intervals or less and thus picture the bolus of diodrast as it circulated through the chambers of the heart and lungs and into the aorta. In this way the chambers of the heart, the positions or transpositions of the great vessels, the congenital shunts, and the abnormal sequences in the time

of visualization of the various chambers of the heart could be recorded for study without regard to a pre-estimated circulation time or the fear of missing the diodrast at the crucial moment. Use of the tautograph reduces the number of repeated injections of diodrast that was formerly required to obtain angiograms with the diodrast in different cardiac chambers and great vessels. One injection of diodrast is now sufficient for recording the cardio-pulmonary circulation. Technician crews that were necessary for the operation of manual angiographic equipment that could make from 6 to 10 exposures are now eliminated. Added clarity and contrast are achieved in the films by using a self-cocking Potter-Bucky grid. The roentgenographic technic has been simplified by completely automatizing the advance of the unexposed cassettes, the energizing of the Potter-Bucky grid, the initiating and ending of the roentgen-ray exposure, and the retiring of the exposed cassette. Angiograms may be taken with the patient in the semi-erect or in the horizontal position. This is an important advantage in the examination of children and infants under anesthesia. The hazard to the patient of excessive roentgen-ray exposure is reduced because roentgenoscopy is not employed.

The tautograph was designed by one of the authors (W.G.S.) and consists of a tilting diagnostic roentgenographic table with angle irons fitted under the top to which rollers were fastened for carrying the cassettes. A heavy roller chain with steel lugs spaced at 14 inches carries the cassettes into position and stops the cassette for one third of a second during which a roentgen-ray exposure of from one fifteenth to one twentieth of a second is made. The cassette is then moved forward and retired into the receiving bin while the next is brought into position for exposure. The time interval consumed in the advance of the cassette, in its stoppage, exposure, and retirement is one second or less. The chain conveyor is energized by an electric motor which operates through reduction gears. The roentgen-ray time exposure is initiated by the self-cocking Potter-Bucky grid, which, in turn, is controlled by a contact switch on the power sprocket connected to the reduction unit.

With the development of cardiac surgery and the greater necessity for the accurate diagnosis of congenital heart disease an increased need had developed for equipment that would make angiocardiography a practical and successful routine procedure.

The technic has also been used to advantage in cerebral angiography. (Am. J. Roentgenol., July '49, W. G. Scott and S. Moore)

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Gamma Globulin in the Anginose Type of Infectious Mononucleosis: Patients with infectious mononucleosis enter the hospital with diagnoses of typhoid fever, Vincent's angina, and, most frequently, diphtheria. Ordinarily, infectious mononucleosis requires little more than supportive care and a watchful eye by way of therapy, but it occasionally appears in severe forms

and may terminate fatally. Cases of the anginose type are characterized by severe membranous tonsillopharyngitis and it may not be possible to differentiate the membrane from that of diphtheria except by laboratory means. Generalized adenopathy and splenomegaly are usually present and aid in establishing the correct diagnosis. However, the final and conclusive evidence comes from the laboratory in the form of a lymphocytosis in the differential blood count, the typical vacuolated Downey cell being present and diagnostic. The heterophile test is rarely positive before the twelfth day, so it is of little early assistance in diagnosis, but the absence of Corynebacterium diphtheriae in the throat smears and cultures is significant. Vincent's organisms are often present and may mislead the inexperienced. When the patients have first received any type of therapeutic serum, the heterophile test must be corrected by absorption technics.

The use of human pooled convalescent scarlet fever serum in the treatment of infectious mononucleosis was first reported by Berkley. Its successful employment by the authors led them to attempt its replacement as a therapeutic agent with human gamma globulin, because it was felt that the gamma globulin content of the original scarlet fever serum used in treatment might be the factor responsible for its beneficial result. The authors use gamma globulin in doses of from 4 to 8 ml. intramuscularly; one dose usually suffices. No untoward reactions have occurred. Penicillin is also given, and occasionally sulfonamides to take care of secondary invaders, but their use alone does not favorably influence the course of the disease. Because of mistaken diagnosis or the difficulty in establishing a correct diagnosis early in the disease, from 20,000 to 60,000 units of diphtheria antitoxin frequently have been given before any other therapeutic procedure. This in itself does not favorably alter the course of the disease. In this connection the disease may be startling in its resemblance to septic diphtheria (the extensive membrane and edema force the consideration of tracheotomy, careful search fails to disclose the typical vacuolated Downey cells, diphtheroids are present in smears, and no report on throat culture is available for from 12 to 24 hours). It is because of this uncertainty in diagnosis and the known danger of withholding diphtheria antitoxin for even a few hours in such cases, should they prove to be clinical diphtheria, that antitoxin in full therapeutic dosage often is so given.

Among those patients with infectious mononucleosis treated in 1947, 14 were clinical cases of the anginose type and had heterophile agglutination titers after absorption of 1:56 or higher by the Paul and Bunnell method. All received gamma globulin and were the severely ill patients to whom the authors have restricted this type of therapy. It is interesting to note that 2 of these patients had positive cultures for diphtheria. They were proved to be avirulent strains, however, and not causing disease. There was no question that the correct diagnosis was infectious mononucleosis.

Response to gamma globulin is shown in one or more of the following 3 ways: drop in temperature; disappearance or definite shrinking of the membrane or exudate; general clinical improvement, the latter being distinct from

the other two, and, at times, actually so dramatic that one confidently expects the patient's rapid recovery. In this series, therapeutic response appeared within from 24 to 72 hours with one exception, and all 3 types of improvement simultaneously were shown in the majority of cases. When all 3 did not occur, the first response noted was the general clinical improvement with a sense of euphoria. This, the authors consider the most important, for it indicates that the unfavorable course of the disease has changed and recovery has started, and the temperature will drop and the throat improve in the ensuing 24 or 48 hours. The authors do not think that the therapeutic response obtained in these cases could be the result of the other modalities such as the diphtheria antitoxin or the penicillin. Many patients have been treated with antitoxin alone in the past, with no effect. Of this series, 6 patients received antitoxin first, and their response was no different from that of those who did not receive it.

Joyce has reported penicillin to be of value in the tonsillopharyngitis of infectious mononucleosis, stating that 3 out of 4 patients so treated respond with a drop in temperature within from 12 to 24 hours. The authors' experience in those patients treated with penicillin alone generally has not shown this. However, in this series, of those receiving penicillin, 5 improved within 24 hours and 7 within 72 hours. In contrast to this, the favorable response to gamma globulin was as follows: 8 within 24 hours, 10 within 48 hours, and 13 within 72 hours. By comparison, a better therapeutic response to gamma globulin is clearly indicated, 50 percent of those who received penicillin showing improvement within 72 hours after administration, the most severely ill patients showing nothing noteworthy; whereas with gamma globulin 93 percent were improved within 72 hours.

The mode of action of gamma globulin remains unknown. The authors do not wish to minimize the effect of penicillin in these cases, but it is their belief that it acts solely upon secondary invaders while gamma globulin is turning the tide. Alone, it is rarely efficacious. Thus the combination may be better than either alone. The authors believe that gamma globulin should be tried in other forms of severe infectious mononucleosis, such as those with jaundice. It may also speed recovery in milder cases. (J. Pediat., July '49, A. G. Bower et al.)

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Action of Hetrazan in Filariasis and Onchocerciasis: Hetrazan (1-diethylcarbamyl-4-methylpiperazine hydrogen dicitrate) is a new compound which has recently been introduced for the treatment in filariasis. Apparently hetrazan acts something like an opsonin, modifying the microfilariae so that they are seized by fixed phagocytes of the reticulo-endothelial system, which later destroy them. The present note reports the main conclusions reached during preliminary clinical investigations in Tanganyika and Uganda. Under African conditions the dose schedule must be as simple and short as possible

if it is to have any wide application. As a general rule, patients were treated with only one dose per day and treatment was not continued more than 7 days.

Most of the patients with Wuchereria bancrofti were treated with hetrazan hydrochloride. This seemed to be better tolerated, in terms of hetrazan base, than hetrazan hydrogen citrate which has since become the standard preparation. In patients with W. bancrofti large doses of hetrazan hydrochloride (20 mg. per Kg. and over) sometimes caused nausea and vomiting, with or without epigastric pain, especially if given on an empty stomach. Occasionally patients complained of tender spots in the groin or scrotum. Otherwise there were no symptoms which distressed the patient sufficiently to excite comment or complaint. (The investigation of minor symptoms in Africans is often difficult.) This maximum tolerated dose of 20 mg. per Kg. once or twice daily is much higher than the dose used by previous workers, namely, 2 mg. per Kg. 3 times daily. Hetrazan is very rapid and effective in removing microfilariae from the blood of patients infected with W. bancrofti. It does not remove microfilariae from hydroceles and it has no direct toxic action on microfilariae in vitro. It is considered that the clinical observations are compatible with the hypothesis that hetrazan acts by modifying the microfilariae so that they are seized by phagocytes.

In patients with Onchocerca volvulus, however, the first doses, even a single dose of 50 mg. hetrazan citrate, almost always produced a violent reaction which was well marked in 16 hours. There was usually swelling, edema, and tenderness of the skin, especially of the buttocks and thighs. Sometimes the prepuce, penis, and scrotum were swollen. Intense itching was always widespread. Sometimes there was a thick papular rash over the trunk and limbs. The lymph-glands were generally enlarged and tender, especially those of the femoral and inguinal groups. There was always fever, sometimes up to 101-102° F. Other symptoms included soreness of the eyes and general aching. These symptoms subsided after a few days and the patients could then tolerate much higher doses, e.g., 12 mg. per Kg. daily. The severity of the reaction seemed to be proportionate to the number of microfilariae initially present in the skin rather than to the level of hetrazan dosage. Apparently the reaction is mostly an allergic one, excited by the breakdown products of microfilariae injured or destroyed by drug. This allergic reaction would make hetrazan unpopular if it were used for the mass treatment of onchocerciasis, although it might be quite acceptable if employed for the mass treatment of filariasis caused by W. bancrofti. In one patient who had dimness of vision before he was treated for onchocerciasis, the vision deteriorated further during treatment and administration of hetrazan was discontinued. Hetrazan removes microfilariae from the skin in patients with onchocerciasis but apparently it does not kill the adult worms. (Lancet, 23 July '49, F. Hawking and W. Laurie)

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Hetrazan (Banocide) in Loiasis: This paper records observations at the Hospital for Tropical Diseases, London, on 17 European patients (8 males

and 9 females) with loiasis treated with 1-diethylcarbamyl-4-methylpiperazine, the filaricidal drug marketed as "Hetrazan" (Cyanamid Products Ltd.) and "Banocide" (Burroughs Wellcome & Co.). The lengths of residence of the patients in endemic areas of Loa loa infection ranged from 1 to 24 years, and the times between last leaving an infected area and coming under the present observation ranged from a few days to 6 years.

In each case, in addition to the clinical assessment, the blood was examined for microfilariae; total and differential leucocyte counts were made; and an intradermal filarial sensitivity test and a filarial complement-fixation test were also performed. These examinations were made before treatment and were repeated at intervals during treatment and subsequently. Each patient was subject to the occurrence of calabar swellings, and had been so for periods varying from 6 months to 14 years. The frequency of occurrence of the swellings varied from one every 2 or 3 days in 2 recently infected persons to one every from 4 to 8 months in a patient who had been infected for 8 years.

Microfilariae were found in only 3 patients; in the remainder films were repeatedly negative despite undoubted evidence of L. loa infection including in 2 patients the presence of worms under the conjunctivae and in another 3 patients the appearance of dead worms under the skin during treatment. A diagnosis of loiasis was accepted if microfilariae of L. loa were found or an adult L. loa was seen. Failing either of these criteria the diagnosis was accepted if all the following conditions were satisfied: (1) the recent history or presence of calabar swellings was beyond doubt, (2) there was an otherwise unexplained eosinophilia of more than 10 percent, and (3) there was immunological evidence of filarial infection shown by intradermal orcomplement-fixationtests.

Because of limited supplies, each of the first 6 patients was treated with daily doses of only 2 mg. per Kg. of body weight, but later the daily dose was increased to 4 mg. per Kg. in 2 cases, and then to 6 mg. per Kg. for each of the remaining 9 patients. The daily dose was divided into 3 equal portions given by mouth after breakfast, luncheon, and supper. Two patients were treated for 10 days, 8 for 14 days, and the remaining 7 for 21 days; the total amounts given varied from 1.2 to 10.5 Gm. The patients were normally kept in the hospital until at least the first week of treatment had been completed, after which, provided they had no toxic symptoms and felt otherwise well, they were treated as outpatients. They were requested to attend the outpatient department at monthly or 2-monthly intervals after treatment; in this way one patient has been under observation for 14 months after finishing treatment, one for 12 months, one for 8 months, one for 6 months, 2 for 3 months, and 6 for 2 months or less. Questionnaires were also sent to 5 patients who went abroad soon after treatment.

On the day after the start of treatment 6 patients complained of itching, and in 3 of them the pruritus was accompanied by rashes. In one the rash was moribilliform and diffusely distributed over the trunk, in another it was urticarial and affected only the left arm, and in the third it was papulo-erythematous and affected only the neck and upper chest; the rashes were transitory and lasted only 48 hours. The irritation was more protracted, taking usually 3 or 4 days to disappear, although in one case it lasted 16 days; its intensity seemed less

than that of the itching and burning experienced by some patients with onchocerciasis treated with the same drug, and it was alleviated by benadryl 50 mg. or anthisan 100 mg. thrice daily. In 3 patients, one of whom had no other cutaneous reactions to treatment, cutaneous thickenings or nodules appeared; these were about 0.5 cm. in diameter and disappeared in 2 or 3 days. In 3 further patients cutaneous serpiginous linear swellings appeared, in one patient within 24 hours and in the other 2 between the third and fourth days from the start of treatment. The appearance, size, and shape of the swellings suggested reactions around adult worms, and in 2 patients specimens of dead adult L. loa were extracted from the swellings. Five of the 17 patients showed no cutaneous reactions during treatment.

The embryos of L. loa rapidly disappeared from the peripheral blood of treated patients. One patient showed a few microfilariae on the day after the start of treatment but none on the third day, whereas before treatment the average number present at the corresponding time of day was about 300 per 20 cmm. of blood. This patient also had embryos of Acanthocheilonema perstans in his blood, and the relative insensitivity of this microfilaria to the drug was clearly demonstrated.

Many patients showed during treatment a rise in their total leucocyte count, associated with an increase in the eosinophil percentage. During treatment 3 patients showed trivial spikes of fever. A more interesting effect on temperature was observed in 4 patients who before treatment were having slight pyrexias accompanied by calabar swellings or visible migrations of worms. Fever is not usually recorded in classical descriptions of loiasis, and it is not clear whether the fever in these patients was accidental or whether the careful observation to which they were being subjected revealed a hitherto unemphasized feature of loiasis. The interesting fact is that in each of the 4 patients the fever disappeared within 36 hours of the start of treatment. Nausea without vomiting was encountered in 4 patients, and lasted from 3 to 5 days after the start of treatment. During treatment 4 patients complained of headache, which though generally mild tended to persist, lasting from 4 days in one case to the whole duration of the treatment in another.

With one exception all the treated patients have remained entirely free from symptoms, and 9 have been followed up for 6 or more months after treatment. In the one exception the patient had a recurrence of calabar swellings, but this was 3 months after re-entering an endemic area of the disease, so it is possible that reinfection had occurred. These results are in general agreement with, but seem somewhat better than, those obtained by Stefanopoulo and Schneider. In most of their patients symptoms, particularly pruritus, recurred although with diminished intensity after an intermission of only about 3 weeks following a single course of treatment; to achieve lasting benefit they found it necessary to give from 2 to 4 courses of treatment. Each of their courses lasted only from 7 to 10 days, and it is possible that longer courses have some advantage.

Neither symptoms nor alterations in total and differential leucocyte counts were found in 2 healthy persons to whom the drug was given in doses of 6 mg. per Kg. of body weight daily for 14 days. It seems likely that the reactions in patients

with loiasis given the drug result from the death of the parasites because embryos disappear from the blood, cutaneous lesions containing dead adult worms are found, calabar swellings and other manifestations of the disease cease, and circulating filarial antibody disappears. The findings suggest that the drug is a valuable filaricidal agent in loiasis. (Lancet, 23 July '49, F. Murgatroyd)

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Notice to All Flight Surgeons: The Bureau of Medicine and Surgery has recently approved a research project to be implemented by the Division of Aviation Medicine whereby a comprehensive study will be made of the role, functions, duties, and responsibilities of the naval flight surgeon. The study will be carried out by a firm of industrial research psychologists with the assistance of certain flight surgeons. The work will be under the direction of a board of senior flight surgeons especially appointed for the purpose.

Preliminary interviews of flight surgeons of the regular Navy and of the Naval Reserve representing a wide variety of billets and experience will provide material for the construction of a questionnaire which will later be sent to all flight surgeons. This will serve as a basis for the scientific determination of the role of the flight surgeon, past, present, and future.

It is believed that this will be the first time any field of medicine has received this type of thorough appraisal. An immediate result will be to provide the Naval School of Aviation Medicine with a sound basis for planning the curriculum for training medical officers to become flight surgeons. (Aviation Medicine Div., BuMed)

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Procedure for the Disposition of Cases of Homosexuality Involving Naval Personnel: Circular Letter 49-514 in the 31 July 1949 Navy Department Bulletin clearly delineates the Navy Department's policy and the administrative procedure for disposition of personnel in cases involving homosexual tendencies or acts. The content of this letter is of importance to almost all Medical Department personnel but particularly to medical officers whose position in relation to such cases is very clearly defined.

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Correspondence Course for Medical and Dental Officers Discontinued: The correspondence course entitled, Correspondence Course for Medical and Dental Officers has been discontinued. This course is to be replaced by a series of correspondence courses, several of which are now available for distribution, as noted in the Navy Medical News Letter, Volume 14, Number 2, dated 29 July 1949. It is recommended that enrollees of the course entitled, Correspondence Course for Medical and Dental Officers who are now working on assignments No. 10, 11, and 12 complete these assignments and forward

them to BuMed in order that promotion and retirement credits may be given. Those enrollees who have not commenced work on assignments No. 10, 11, and 12 may, without further notice, consider themselves disenrolled. No credit values are allowable for the partially completed course. Announcement of additional correspondence courses will be made in the Medical News Letter in the near future. (Reserve Div., BuMed)

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Reserve MO's and DO's May Serve as Consultants to Obtain Reserve Credits: See BuMed Circular Letter 49-95 on page 30.

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New Course in Aviation Medicine: A new class in aviation medicine will start on 15 November 1949, at the School of Aviation Medicine and Research, Pensacola, Florida. The course is limited to 30 students and is open to medical officers in the ranks of lieutenant commander and below in the regular Navy and the Naval Reserve on active and inactive duty. Medical officers of the Naval Reserve on inactive duty are especially desired for this training. An agreement not to resign during the course and to remain on active duty for one year after completion of the course must be included in each application.

The course consists of an academic period of 6 months' duration and a flight training period of 3 months.

The curriculum has been recently revised to include special training in the operational and field aspects of aviation medicine. Special training is offered in the medical aspects of atomic warfare, in the problems of acceleration involving the human body, including studies employing the human centrifuge, and in the effects of high altitude flight which includes the use of emergency equipment and the low pressure chamber. In addition, instruction is given in certain basic technics in research which will be highly useful in solving operational problems in the field. Flight surgeons in the past have made extensive contributions in the development and improvement of materiel and methods to increase flying efficiency, reduce operational fatigue, and improve flying safety.

The academic portion of the course continues to include instruction in otolaryngology, ophthalmology, psychiatry, and aviation physiology, together with the aspects of these special fields of medicine which are particularly related to aviation. Medical officers successfully completing the academic course who meet all requirements are given the additional 3 months' flight training during which they receive the extra compensation incident to duty involving flying. Graduates of the complete course are designated flight surgeons and are eligible for duty involving flying with active aviation units.

The opportunities of a flight surgeon for a successful, useful, and happy career are great because of the importance and breadth of the field of aviation and aviation medicine. A flight surgeon has excellent clinical facilities aboard aircraft carriers and in air station dispensaries in addition to the special opportunities in operational and research capacities in aviation medicine.

For those Reserve officers who may wish to return to civilian life after their tour of active duty, unusual opportunity for continued association with naval aviation is offered through the Naval Air Reserve Training Program. Naval Reserve flight surgeons may serve in a full-time capacity or on a once-a-week training basis with an annual two weeks' active-duty training period with full pay and allowances for the services performed. This latter feature is often of considerable financial value to a young physician in gaining a start while at the same time providing an opportunity for service. Further, such service makes it possible progressively to qualify for promotion and for the many other benefits incident to active participation in the Naval Reserve, including retirement authorized by recent legislation. Such opportunities for Reserve medical officers are great in the field of aviation medicine because of the size and varied locations of the Naval Air Reserve Training facilities.

Medical officers of the regular Navy and of the Naval Reserve on active duty who desire to apply for this course should do so by letter or dispatch to the Chief of the Bureau of Medicine and Surgery; Reserve officers on inactive duty should apply to the Chief of the Bureau of Medicine and Surgery via the Commandant of their naval district. (Aviation Medicine Div., BuMed)

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To: ALSTACON
COMFOURTEEN
COMSEVENTEEN
CINCNELM
COMNAVFORFE
COMTEN
COMFIFTEEN
COMDGEN FMFPAC
COMNAVFORGER
COMNAVPHIL

Subj: Concerning Disability or Death of Reserves

(1) This is initial regulation in implementation of Public Law 108, 81st Congress which provides in part that naval and MARCORP Reservists ordered or authorized to perform TRADU, drills, equivalent instruction or duty, appropriate duties, or group training duty, as defined in BUPERS and MARCORPS manuals, on or subsequent to 14 August 45, who suffer disability or death in line of duty from injury while so employed, shall be deemed to have been in active naval service during such period, and they or their beneficiaries shall be in all respects entitled to receive the same pensions, compensation, death gratuity, retirement pay, hospital benefits and pay and allowances as are now or may hereafter be provided by law or regulation for personnel of the regular naval establishment.

(2) Inactive naval and MARCORP Reservists currently hospitalized, or who require hospitalization due to disability suffered as result of injury under circumstances noted in para one, shall be hospitalized at government expense by immediate COMDGOF, if practicable in naval or other government hospitals otherwise in other hospitals. COMDGOFS of such personnel who are now or may hereafter be hospitalized shall immediately notify by dispatch COMDT, CNARESTRA or MARCORPS having jurisdiction over them at time of disability. Info ADEES shall be BUMED and for Naval Reservists BUPERS. Naval and MARCORP Reservists coming within purview para one whose period of hospitalization was terminated prior to receipt of letter referred to in para nine shall establish entitlement to benefits in accordance with procedure outlined in such letter.

(3) Dispatch notification shall include following:

(A) Reservists full name.
(B) Rank or rate.
(C) File or service number.
(D) Duty Status (Drill, TRADU, etc.) when injured.
(E) Nature of injury and estimated period of disability.
(F) Circumstances surrounding injury.
(G) Name and location of hospital where hospitalized.
(H) Estimated period of hospitalization.
(I) Whether injury was received in line of duty.

(4) Line of duty determination will normally be made by COMDGOF. Where doubt exists the word "undetermined" shall be employed and determination when made, shall be reported by supplemental dispatch.

(5) In cases where it is necessary to hospitalize Reservists in other than naval hospitals, procedures governing hospitalization of regular personnel of the naval establishment shall be observed and reports rendered accordingly.

(6) Detailed entries shall be made in health records of any injuries, no matter how slight. If health records are maintained by other activities, COMDGOFS will submit information to such activities for recording therein.

(7) Submit Forms CA-1 and CA-2 to Bureau of Employees Compensation as heretofore to prevent deprivation possible future benefits under that agency.

(8) In event of death of a naval or MARCORP Reservist or in event such person is missing incident to performance any duty under circumstances noted in para one, administrative procedures and entitlement to death gratuity and burial expenses shall be identical th those prescribed in instances involving personnel of regular naval establishment.

(9) Instructions in letter form as to administrative procedures, including type orders to be employed and method of pay, necessary to implement these regulations will follow. --SecNav.

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M33/DTG/mbm, L8, M-0719524 19 July 1949

To: All Bureaus and Offices

Subj: Armed Services Medical Procurement Agency

Ref: (a) Charter of the Armed Services Medical Procurement Agency, 20 June 1949.

Encl: (A) Copy of ref. (a).

1. The Munitions Board, in its meeting of 16 June 1949, approved the re-establishment of the Armed Services Medical Procurement Agency to be chartered by joint letter of the three Departments.

2. Enclosure (A) is enclosed herewith for information.
--SecNav.

Note: Copy to All Ships and Stations via Navy Department Bulletin, 31 July 1949.

BUMED CIRCULAR LETTER 49-91 10 August 1949

To: All Ships and Stations

Subj: Emergency Maternity and Infant Care Program; Termination of

Refs: (a) BuMed C/L 44-91 of 22 May 1944; AS&SL Jan-Jun 1944, 44-618, p. 391.
(b) BuMed C/L 45-78 of 22 Mar 1945, BUMED-WH P3-2/NH (064-39) to all NavStas & MarCorps Acts Cont plus 10th, 14th, and 15th ND's.
(c) BuMed C/L 45-256 of 16 Oct 1945, BUMED-WH-PBC P3-2/NH to NavHosps and to NavStas having Dispensaries.
(d) Par. 4110, ManMedDept, 1945.

1. References (a), (b), and (c) are modified as follows:

Reference (a). (1) Delete complete paragraph headed Line 60--Dependents, State-aid beneficiaries.
(2) Under section entitled "(7) Section G-STATUS OF LOCAL COLLECTIONS" delete the complete paragraph headed Line 4--Dependents, State-aid program.

Reference (b). Delete paragraphs 10 and 11.

Reference (c). (1) Delete paragraph 3.
(2) Change the first sentence of paragraph 4 to read:

"Prospective mothers already under the care of medical officers at naval activities may be afforded continued out-patient prenatal medical care or hospitalization when in the opinion of the medical officer undue hardship would result from refusal of such medical care, provided that the continuation of out-patient treatment under this authority shall in no instance be beyond a date later than thirty days after discharge of the father from the naval service."

Reference (d) will be deleted in a future change to the Manual of the Medical Department. Authority for out-patient treatment or hospitalization of all bona fide dependents of naval personnel regardless of pay grade is continued in paragraph 416 of the Manual.

2. The Emergency Maternity and Infant Care Program established by Public Law 11 of the 78th Congress which was approved 15 March 1943 was terminated by the Labor Security Appropriation Act for 1948 with provision for certain cases to be continued under care as defined in that latter Act. The last date under which any part of such care could be provided was 20 April 1949. --BuMed. C. A. Swanson

BUMED CIRCULAR LETTER 49-92 11 August 1949

To: All Activities with Medical Department Personnel Attached

Subj: Use of "Sedative Drugs" (Barbiturates) or Application of Other Methods for the Purpose of Obtaining Evidence in Disciplinary or Investigative Matters

1. In any case in which the administration of drugs by a medical officer or by Medical Department personnel is contemplated for the use of obtaining evidence in disciplinary or other proceedings of a legal nature is contemplated, specific authority of the Chief of the Bureau of Medicine and Surgery will be required. Such authority may be requested by dispatch. This request shall include:

(a) Statement of the drugs or methods to be used;

(b) The identity of each person subjected to such measures;

(c) A statement as to whether or not such person has consented voluntarily in writing to undergo such treatment;

(d) The part which medical personnel are expected to perform; and

(e) The prior experience claimed by such personnel in administering drugs and application of procedures for that purpose.

2. These instructions shall apply similarly to any other application by Medical Department personnel of lie detectors or similar means of obtaining evidence.

3. These instructions are based on the professional considerations involved. It is apparent that extensive professional knowledge and experience must be demonstrated before a medical officer may proceed to administer a drug to a given individual with the expectation that reliance on the effects of that drug may be complete and whole as a matter of evidence. The same degree of personal experience should be required to avoid any possibility of injury or death which conceivably could result from such treatment of persons subjected to extreme tension, fatigue, exposure, and other unobserved illness.

--BuMed. H. L. Pugh

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BUMED CIRCULAR LETTER 49-93 11 August 1949

To: Holders of the Bulletin of Bureau of Medicine and Surgery Circular Letters

Subj: BuMed Circular Letters; Cancellation of

This letter cancels BuMed Circular Letters 43-156, 44-139, 45-5, 47-72, 48-13, and 48-84.

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BUMED CIRCULAR LETTER 49-94 11 August 1949

To: All Ships and Stations

Subj: BuMed Circular Letters: Cancellation of

This letter cancels BuMed Circular Letters 43-187, 45-90, 46-11, 47-124, 48-69, and 48-93.

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BUMED CIRCULAR LETTER 49-95 12 August 1949

To: Commandants, Continental Naval Districts

Subj: Utilization of Medical Officers and Dental Officers of the Naval Reserve as Consultants in Naval Activities without Pay: Information on

Refs: (a) BuPers ltr Pers-1D-15-be, Serial No. 1017, Tables of Organization for Naval Reserve, Fiscal 1950.
(b) H5304 BuPers Manual, Revised 1947.
(c) H5307 Par 3, BuPers Manual Revised 1947.

1. Under the general provisions of paragraphs 5 and 6 of reference (a), a maximum of 48 periods of appropriate duties without pay are prescribed for members of the Volunteer Reserve in accord with provisions of reference (b) and (c). The Chief of Naval Personnel may authorize two weeks' training duty, with or without pay, in excess of the appropriate duty periods indicated.

2. Medical officers and dental officers of the Naval Reserve who serve in a contract status as consultants in the Naval Medical or Dental Intern Training Programs or Residency Training Programs may, at their own request, be changed to a status of "appropriate duty without pay" in their capacity as consultants. They would, therefore, be eligible to receive a maximum of 48 appropriate duty without pay periods, consisting of one period for each consultation visit to the naval activity as presently carried out under the Naval Graduate Medical or Dental Training Programs. If these consulfants are now authorized for more than 48 visits per year, the balance may be carried out under contracts presently in force. The consultants are appointed to assist

in the teaching programs for medical and dental officers who are assigned to intern and residency training. Their duties will include participation in staff conferences, clinical lectures, journal-club meetings, clinical pathological conferences and formal ward rounds. In addition, they serve as clinical consultants to the Chiefs of the Services or heads of departments as required.

3. Medical officers in command of naval hospitals, with the assistance of the graduate training committee, should arrange a regular schedule of individual duties for consultants in conjunction with those of the regular staff in the teaching program. A similar regular schedule of duties should be arranged by the commanding officer and head of the dental department for Reserve dental consultants to naval dental activities which are not in naval hospitals.

4. Commanding officers of hospitals and other activities not conducting intern or residency training, and who heretofore have not had the services of consultants, may in addition to teaching hospitals recommend to the Surgeon General the appointment of medical officers and dental officers of the Naval Reserve as consultants. Such recommendations shall include a brief description of the qualifications of the Reserve officer to be considered. Appropriate duty for Reserve medical and dental officers who are consultants to activities not conducting either intern or residency training shall consist of service as clinical consultants to the heads of department or chiefs of service and/or professional service in unusual cases as required.

5. Consultants should be outstanding specialists in their community and should be diplomates of an American Specialty Board. The qualifications of prospective consultants will be investigated by the Bureau of Medicine and Surgery and, when approved by the Surgeon General, such consultants will be invited to serve in this capacity by the Surgeon General. When a prospective consultant accepts or rejects the invitation, the commanding officer who recommended him will be so notified.

6. Medical and dental Reserve consultants to naval activities will be authorized to use with their names the title: "(Grade), MCR or DCR, USNR, Reserve Consultant in (Specialty) to the U. S. Naval (name and location)." For example: "Captain John Doe, MCR, USNR, Reserve Consultant in Radiology to the U. S. Naval Hospital, St. Albans, New York." --BuMed. H. L. Pugh

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BUMED CIRCULAR LETTER 49-96 Joint Letter 12 August 1949

To: All Ships and Stations

Subj: Disciplinary Cases Under Treatment in Naval Hospitals; Security of

Refs: (a) BuPers Manual, paragraph C-7811.
(b) Manual of the Medical Department, paragraph 16A17.3.

1. It is noted that the type and degree of security deemed necessary for the custody and control of personnel in a disciplinary status undergoing treatment in naval hospitals is subject to various and divergent interpretations. In order to clarify and establish uniform procedure in this regard, based solely on the disciplinary status, the following comments and instructions are promulgated.

2. It should be distinctly understood that personnel in a disciplinary status who are received for treatment or observation fall into one of two categories; namely, those sentenced by a court martial, deck court, or mast action; and those not under approved sentence, but in an awaiting action status.

3. Commanding officers should insure that complete information regarding the disciplinary status of personnel transferred to a hospital for treatment or observation is contained in the special report attached to the hospital ticket, form NAVMED-G or 416. In those cases where individuals are awaiting trial by general courts-martial, or action leading to recommendation therefor, or are homicidal or degraded, or whose escape would constitute a public menace or scandal, specific recommendation relative to the degree of restraint deemed necessary should be included. The Medical Officer in Command should insure that each such report is given careful study prior to determining the degree and type of restraint to be exercised over the individual during his hospitalization.

4. Except under the conditions outlined above, personnel received for hospitalization in an awaiting action status, or under sentence imposed by competent authority which does not include confinement, should not be placed in locked wards unless other conditions so dictate.

5. Personnel received for hospitalization who are under sentence of confinement imposed by competent authority, and those special cases outlined in paragraph three above, should be suitably restrained in locked wards. In this regard a sentence of solitary confinement on bread and water or diminished rations is not operative during hospitalization and personnel received in this category should not be restrained in locked wards unless other considerations so dictate.

6. The restraint and control of those patients treated in locked wards may generally be assured by normal hospital security measures without recourse to special guard personnel. Normal hospital security measures to prevent escape are defined as use of one-access locked wards, nonaccessibility of other than hospital garb and frequent sighting of prisoner patients by ward hospitalmen.

7. Only in those special cases where the prisoner patient, whether under sentence or awaiting action, is homicidal or degraded (or one whose escape would constitute a public menace or scandal), should the Medical Officer in Command have need to request the Commandant of the situate district or river command to provide guard personnel to the hospital to insure the custody of such prisoner during the period of hospitalization. In the case of hospitals on Marine Corps reservations, this request should be addressed to the appropriate Marine Corps commander.

8. It is emphasized that the hospitalization of personnel in disciplinary status is primarily for medical treatment or observation, which is the paramount consideration of the medical staff. The Medical Officer in Command is, therefore, justified in any deviation from the above which, in his judgment, is desirable and necessary in the proper medical treatment of the individual.

--BuPers. T. L. Sprague --BuMed. C. A. Swanson
--MarCorps. C. B. Cates

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BUMED CIRCULAR LETTER 49-97 16 August 1949

To: All Ships and Stations

Subj: Thoracic Surgical Centers: Designation and Establishment of

1. Effective this date, the U. S. Naval Hospitals, St. Albans, New York, and Long Beach, California, are designated and established as the Thoracic Surgical Centers for the east and west coasts respectively. Transfers to these Centers shall be in accordance with current directives.

2. All directives contrary to this letter are cancelled or superseded.

3. Required changes in the Manual of the Medical Department will be made accordingly in future Manual changes. --BuMed. H. L. Pugh

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BUMED CIRCULAR LETTER 49-98 16 August 1949

To: All Ships and Stations

Subj: Reports: Cancellation of

1. The following reports are no longer required by the Bureau and are hereby cancelled:

(a) Report of Burial Overseas (par. 5138 MMD).
(b) Report of Casualties (par. 5139 MMD).
(c) Report on Cases of Asphyxia (par. 5143 MMD).
(d) Assignment and Housing of Hospital Corps (par. 5131 MMD).

2. Appropriate changes to the Manual of the Medical Department will be made at a later date. --BuMed. H. L. Pugh

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BUMED CIRCULAR LETTER 49-99 16 August 1949

To: All Ships and Stations

Subj: Hospital Corps School, Class "B," U. S. Naval Hospital, Portsmouth, Virginia - Modification of Curriculum

Ref: (a) Catalog of Hospital Corps Schools and Courses, Revised 1944.

Encl: (A) Copy of Revised Curriculum

1. The course of instruction for enlisted personnel of the Hospital Corps at the U. S. Naval Hospital Corps School, Class "B," Naval Hospital, Portsmouth, Virginia, has been extended from sixteen (16) weeks to twenty (20) weeks, effective with the class which convened 27 June 1949.

2. The curriculum will follow that outlined in Enclosure (A) and will be incorporated in the next revision of the Catalog of Hospital Corps Schools and Courses.

3. Assignments to this school currently are restricted to Chief, First and Second Class Hospital Corpsmen, and will continue as in the past to be made on Bureau quota orders. --BuMed. C. A. Swanson

Enclosure "A"

ADVANCED HOSPITAL CORPS SCHOOL CERTIFICATE

		Subjects	Clock Hours Theoretical	Practical
ADM	1	Administration	50	20
BACT	1	Bacteriology and Elementary Laboratory Technic	15	30
CLER	1	Clerical Forms and Procedures	20	60
EMC	1	Emergency Medical Care	45	15
PA	1	Property and Accounting	15	50

(Cont.)

		Subjects	Clock Hours Theoretical	Practical
MMT	2	Materia Medica and Toxicology, advanced	45	5
MSFA	2	Minor Surgery and First Aid, advanced	45	15
HS	2	Hygiene and Sanitation, advanced	50	20
PHAR	2	Practical Pharmacy	15	45
CHEM	2	Chemistry	15	5
MIL	3	Military Requirements	0	60
HM	1	Practical Duty Assignments	0	160
		Total hours	315	485
		Grand total	800	

ADM 1 Administration
Training in the duties and responsibilities and limitations of hospital corpsmen when serving on ships and stations in the absence of medical officers.

BACT 1 Bacteriology and Elementary Laboratory Technic
Introductory bacteriology and basic principles of clinical laboratory procedures.

CLER 1 Clerical Forms and Procedures
Preparation of reports, returns, forms, and official correspondence.

EMC 1 Emergency Medical Care
Emergency care of casualties at sea in the absence of a medical officer.

PA 1 Property and Accounting
Procurement, accounting and preservation of stores.

MMT 2 Materia Medica and Toxicology, advanced.
Therapeutic uses of drugs, with emphasis upon those available on small ships and stations.

MSFA 2 Minor Surgery and First Aid, advanced.
Radiological hazards, night vision testing, chemical warfare, blast concussion, survival on land and sea, combat casualties.

HS 2 Hygiene and Sanitation, advanced.
Sanitary measures on board ship.

PHAR 2 Practical Pharmacy
Fundamental pharmaceutical technics and the mathematics of pharmacy.

CHEM 2 Chemistry
Principles and practice of inorganic qualitative and quantitative chemical analysis.

MIL 3 Military Requirements

HM 1 Practical Duty Assignments

(Cont.)

PREREQUISITES

Minimal Qualifications	Desirable Qualifications
HM2	Previous Sea Duty Experience
Graduate of Basic Hospital Corps School or equivalent	First-Aid Experience
	Operating Room Experience
	Clerical Experience
	Field Service Experience

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ALSTACON 16 August 1949

Subj: Air Transportation Remains Deceased Naval Personnel

BuMed Circular Letter 49-90 which appears in the Navy Department Semi-Monthly Bulletin of 31 July 1949 and which cancels SecNav Letter 47-723 Navy Department Bulletin July-December 1947 pertaining air transportation remains deceased naval personnel hereby modified by addition paragraph 3 as follows: air transportation for remains of the dead will not be requested or provided within continental United States. --SecNav.

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